

THE  
ONTARIO WATER RESOURCES  
COMMISSION

REPORT TO

THE  
BOARD OF TECHNICAL  
ADVISORS

TO THE

INTERNATIONAL JOINT  
COMMISSION

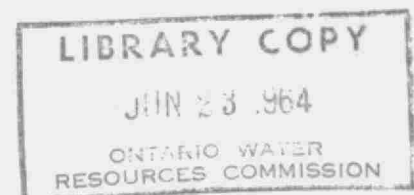
ON

INDUSTRIAL WASTE SURVEY

OF THE

ABITIBI POWER AND PAPER  
COMPANY LIMITED  
SAULT STE. MARIE, ONTARIO

SEPTEMBER 1959



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R E P O R T  
ONTARIO WATER RESOURCES COMMISSION

Municipality Sault Ste. Marie Date of Inspection September 10, 11,  
and 12, 1959  
Re: Abitibi Power and Paper Company Limited  
Field Inspection by A. J. Harris Report by A. J. Harris

INTRODUCTION

The sources of pollution of the St. Mary's River were reviewed during September 1959 to determine the present status of the waste control measures applied by the industries in Sault Ste. Marie, Ontario.

The Abitibi Power and Paper Company has two outfalls which discharge process waste to the tailrace of the Company's twelve hydraulic wheels. The tailrace level was about twenty feet lower than the headrace and the municipal water works intake was located opposite the headrace of the hydraulic grinders. The combined flow of the two outfalls was estimated to be as much as twenty million gallons per day, depending upon the units operated. The waste consisted of paper mill white water and spent sulphite liquor.

The study was undertaken to determine the current concentration of contaminants existing in the plant outfalls to the river. A further objective was to obtain additional information on the waste disposal equipment installed and other measures now used to control the waste discharge since the previous investigations of the waste disposal situation.

PERSONNEL PARTICIPATING

For the Abitibi Power and Paper Company Limited:

Dr. H. M. McFarlane, Research Department,  
Mr. D. O. White, Control Superintendent,  
Mr. R. J. Kelly, Instrument Engineer, and  
Mr. Walter Labunski, Control Engineer.

For the Ontario Water Resources Commission:

Mr. A. J. Harris, Assistant Supervisor, Industrial Wastes,  
Mr. D. Caplice, Chemical Engineer,  
Mr. E. E. Jokipii, Engineering Student, and  
Mr. I. Reiman, Engineering Student.

PRODUCTS

The Sault Mill of the Abitibi Power and Paper Company Limited produced about 100,000 tons of newsprint per year, about 30,000 tons of unbleached sulphite pulp and about 8,000 tons of groundwood specialty paper.

OPERATIONS PRODUCING PROCESS WASTES

(a) Woodroom - The sewered material from this section, in which barking, cleaning and chipping operations were done, was mostly small amounts of fine bark. During winter, white water from the paper machines was used in the woodroom in place of fresh water. The woodroom effluent was sewered to the main mill sewer.

(b) Groundwood Section - Groundwood pulp was produced by forcing the wood against grindstones, using a spray of "white water" to carry away the fibre. The fibre-water mixture was screened for quality control. Coarse material was salvaged from the screens and used for coarse grades of paper

OPERATIONS PRODUCING PROCESS WASTES cont'd.

instead of newsprint. There was little process waste from the production of groundwood pulp, other than that from floor drains and overflows from the grinding machines. Groundwood pulp was refined and thickened before being blended with sulphite pulp for the manufacture of paper. Some fine wood fibre and "pitch" was lost to the sewer in the refining and thickening operations.

(c) Sulphite Digesters - Sulphite pulp was produced by digestion of wood chips in a calcium bisulphite liquor. The liquor was made by passing sulphur dioxide, obtained by burning sulphur, through a tower filled with calcium carbonate. Water was sprayed from the top of the tower. The mixture of calcium bisulphite and sulphurous acid in water obtained in this manner was called calcium bisulphite liquor and was used for dissolving practically all of the material but the cellulose from the wood. The cooking operation lasted about twelve hours, after which the contents of the digester was removed to a blowpit. The spent liquor was drained off, the pulp washed with water and then screened, refined and thickened.

The sewerage material consisted of spent sulphite liquor containing about 50% of the original weight of the wood plus some wood fibre and "pitch". There were four digesters, each 17 feet by 54 feet.

(d) Sulphite Pulp Production - The mill was equipped to produce dried sulphite pulp for sale to other paper manufacturers. There were two Rodgers machines for sulphite sheets and one machine for groundwood

OPERATIONS PRODUCING PROCESS WASTES cont'd.

and sulphite screenings laps. The production of dried sulphite pulp depended upon market conditions. The operation of the sulphite drying machines could result in an additional two million gallons of water per day being sewerred.

(e) Paper Manufacturing Process - There were four Fourdriniers for the production of newsprint at the Sault mill. Pulp was blended in the proportion of about 85% groundwood to 15% sulphite pulp followed by thickening and filtering. The percentage of pulp in water was adjusted to the correct consistency, screened and fed to the Fourdrinier machines. The water removed from the pulp as the paper was formed by screening, vacuum boxes, suction couch rolls and press rolls was called white water. The white water contained fibres and fillers such as clays and was treated in savealls. There was one Sveen-Pedersga white water saveall and one Oliver vacuum filter 8 feet by 16 feet for paper mill coloured "white water". Some "white water" was reused for the hydraulic grinders, in the woodroom during winter months and some was recirculated for dilution of pulp.

SAMPLING LOCATIONS AND PROCEDURE

The sample points selected were:

- (a) Main mill sewer:- This outfall carried "white water", floor drains and overflows from the groundwood machine room, woodroom effluent, water intake screenings, and sanitary sewage.

SAMPLING LOCATIONS AND PROCEDURE cont'd.

- (b) Sulphite sewer:- Spent sulphite liquor was discharged through this outfall along with machine and "white water" from the sulphite section.

Both outfalls were sampled hourly for a total of twenty-four hours beginning at 8 a.m., September 11th, 1959. Composite samples were prepared covering the three successive eight hour periods. A portion of each composite sample was preserved with copper sulphate at the time of collection for the phenol analyses for which the Gibbs method was used.

FLows AND NATURE OF WASTES

- (a) Main mill sewer - The total flow in this sewer was estimated at 5.85 million gallons per day and originated from the following sources -

|                                          | <u>M.G.D.</u> |
|------------------------------------------|---------------|
| Paper mill - sulphite Feinc filter       | 0.90          |
| Oliver filter and colour weir            | 0.96          |
| Bird weir                                | 0.75          |
| Paper machine presses and couches        | 0.44          |
| Sub total                                | <u>3.05</u>   |
| Woodroom                                 | 1.80          |
| Sanitary, floor drains and miscellaneous | <u>1.00</u>   |
| Total                                    | <u>5.85</u>   |

The total flow in the main mill sewer was estimated at 17.5 million gallons per day in October of 1958.

- (b) Sulphite sewer - The estimated flow in the sulphite sewer was 8.20 million gallons per day consisting of spent sulphite liquor from the digester blow pits, blow pit wash water, white water from the sulphite section, and sulphur dioxide cooling water and cooking acid.



FLWS AND NATURE OF WASTES cont'd.

|                                                 | <u>M.G.D.</u> |
|-------------------------------------------------|---------------|
| Sulphite drying machine                         | 4.00          |
| Blow pit washwater                              | 1.00          |
| SO <sub>2</sub> gas cooling water               | 1.00          |
| Cooking acid                                    | 0.20          |
| Sewer effluent (Sulphite white water<br>system) | 2.00          |
| Total                                           | <u>8.20</u>   |

ANALYTICAL RESULTS

The analytical results of the samples collected are listed in the appendix. All analyses were carried out at the Laboratories of the Ontario Water Resources Commission, 46 Wellesley Street West, Toronto

QUANTITY OF WASTE DISCHARGE

The amounts of some of the waste constituents discharged through the two outfalls were calculated from the analytical results and the estimated volume of waste flow. They are as follows:

|                                 |                    |
|---------------------------------|--------------------|
| 5-day Biochemical oxygen demand | 96,718 lb. per day |
| Suspended solids                | 42,834 lb. per day |
| Volatile suspended solids       | 36,561 lb. per day |
| Acidity                         | 19,456 lb. per day |
| Alkalinity                      | 2,223 lb. per day  |
| Iron                            | 231 lb. per day    |

SEWERED POPULATION EQUIVALENTS

Based on 0.167 pounds of 5-day biochemical oxygen demand per

SEWERED POPULATION EQUIVALENTS cont'd.

capita per day, the sewerred population equivalent for the waste discharged to the St. Mary's River by the Abitibi Power and Paper Company was 579,150 persons.

The sewerred population equivalent for suspended solids based on a per capita contribution of 0.2 pounds per day was 214,170 persons.

DISCUSSION OF DATA

The following limits, recommended for an industrial effluent discharged to a water course are presented for use in comparing the results obtained in the analyses.

|                                 |             |
|---------------------------------|-------------|
| 5-day Biochemical oxygen demand | 15 ppm      |
| Suspended solids                | 20 ppm      |
| pH range                        | 5.5 to 10.6 |
| Phenol                          | 20 ppb      |
| Iron                            | 17 ppm      |

The results of the analyses are presented in appendices i and ii together with a calculated average of the three eight hour composite samples.

Those analyses requiring comment are

- (a) 5-day biochemical oxygen demand - both outfalls
- (b) Suspended solids - both outfalls
- (c) pH and acidity - sulphite sewer outfall
- (d) Phenol - main mill outfall

DISCUSSION OF DATA cont'd.

(a) 5-day Biochemical oxygen demand

The main mill outfall remained fairly even in biochemical oxygen demand concentration for the three eight hour composite samples and averaged 89 parts per million. This was a decrease of about 15 ppm from the results obtained in 1953 but still in excess of the recommended limit.

The sulphite sewer was very high in 5-day biochemical oxygen demand and the average concentration over a 24 hour period was 1,116 ppm. The number of digesters blown in each eight hour period will influence the strength of this sample. The shift between 12 midnight and 7 a.m. apparently received more spent sulphite liquor since the 5-day biochemical oxygen demand increased from 840 and 708 for the first two shifts to 1,800 for the third shift. The quantity and concentration of 5-day biochemical oxygen demand in the sulphite sewer indicates the necessity for pre-treatment of this effluent before discharge to the St. Mary's River.

(b) Suspended solids

The average suspended solids in the main mill sewer was 243 ppm, of which 219 or about 90% was volatile. This indicated that the majority of the suspended matter in this sewer was pulp fibre. The sulphite sewer was still higher in suspended solids concentration and again showed about 90% of the material was volatile. This sewer carried machine and "white water" from the sulphite section in addition to the spent liquor from the digester blow pits.

The concentrations of suspended solids discharged to the water-course were considered excessive for an industrial effluent.

DISCUSSION OF DATA cont'd.

(c) pH

The pH of the sulphite sewer effluent, indicating the intensity of the acid in the waste, was outside the recommended lower limit. The pH of this outfall averaged 3.8 over the twenty-four hour period and would require neutralization with an alkali to raise the pH to 5.5 before meeting the requirements of the Commission for an industrial effluent discharged to a watercourse.

(d) Phenol

Phenol or phenol equivalents were measured by the Gibbs method. The main concern with phenol in a stream is the possible contamination of a water supply. Phenol reacts with chlorine, even when highly diluted, to produce intensely aromatic compounds. Sixty parts per billion of phenol were found in the main mill sewer over a twenty-four hour period. The phenol probably originated from slime control chemicals used in the mill water supply. The use of slime control compounds permit the re-use of "white water" in certain sections of the mill.

The concentration of phenol in the main mill sewer exceeded the recommended limit of 20 ppb.

DISCUSSION OF DATA cont'd.

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The concentration of phenol in the main mill sewer exceeded the recommended limit of 20 ppb.

## Appendix ii

ONTARIO WATER RESOURCES COMMISSION  
CHEMICAL LABORATORIES  
INDUSTRIAL WASTE ANALYSIS

Municipality: Sault Ste. Marie.

Report to:

c.c.

Source: Abitibi Power and Paper Co. Ltd.,  
Sulphite Sewer.

Date Sampled: Sept. 11. 12/59 By: A.J.Harris.

| Lab.<br>No. | 5-day<br>F.O.D. | S O L I D S |       |       |   | Turbidity | pH  | Alkalinity | Phenol in<br>ppb | Acidity | Iron |
|-------------|-----------------|-------------|-------|-------|---|-----------|-----|------------|------------------|---------|------|
|             |                 | Total       | Susp. | Diss. | * |           |     |            |                  |         |      |
| T-842       | 840             | 3542        | 206   | 3336  | a | 253       | 4.0 | -          | 0                | 184     | 3.20 |
|             |                 | 2844        | 188   | 2656  | b |           |     |            |                  |         |      |
| T-844       | 708             | 4778        | 472   | 4306  | a | 341       | 3.8 | -          | 0                | 211     | 1.72 |
|             |                 | 3958        | 426   | 3532  | b |           |     |            |                  |         |      |
| T-846       | 1800            | 5852        | 368   | 5484  | a | 319       | 3.6 | -          | 0                | 288     | 1.48 |
|             |                 | 4704        | 340   | 4364  | b |           |     |            |                  |         |      |
| AVERAGE     | 1116            | 4724        | 349   | 4375  | a | 304       | 3.8 | -          | 0                | 228     | 2.13 |
|             |                 | 3835        | 318   | 3517  | b |           |     |            |                  |         |      |

\* a Residue on evaporation at 103°C.  
b Volatile matter on ignition at 600°C.

LOCATION

T-842 8a.m. - 3p.m. Sept. 11. 1959. Sulphite Sewer to Tailrace.  
T-844 4p.m. - 11p.m. Sept. 11. 1959. Sulphite Sewer to Tailrace.  
T-846 12mid. - 7a.m. Sept. 12. 1959. Sulphite Sewer to Tailrace.

## Appendix i

ONTARIO WATER RESOURCES COMMISSION  
CHEMICAL LABORATORIES  
INDUSTRIAL WASTE ANALYSIS.

Municipality: Sault Ste. Marie.

Report to:

c.c.

Source: Bitibi Paper and Paper Co. Ltd.  
Main Mill Sewer Outfall.

Date Sampled: Sept. 11, 12./59 By: A.J. Harris.

| Lab.<br>No. | 5-Day<br>B.C.D. | SOLIDS |       |       | * | Turbidity | pH  | Alkalinity | Acidity | Phenol<br>in ppb | Iron |
|-------------|-----------------|--------|-------|-------|---|-----------|-----|------------|---------|------------------|------|
|             |                 | Total  | Susp. | Diss. |   |           |     |            |         |                  |      |
| T-843       | 57              | 542    | 418   | 124   | a | 396       | 6.3 | 39         | 14      | 35               | 1.00 |
|             |                 | 414    | 366   | 48    | b |           |     |            |         |                  |      |
| T-845       | 79              | 308    | 114   | 194   | a | 363       | 6.3 | 39         | 12      | 100              | 1.08 |
|             |                 | 210    | 102   | 108   | b |           |     |            |         |                  |      |
| T-847       | 92              | 340    | 196   | 144   | a | 319       | 6.3 | 36         | 12      | 45               | 0.96 |
|             |                 | 260    | 190   | 70    | b |           |     |            |         |                  |      |
| AVERAGE     | 90              | 397    | 243   | 154   | a | 359       | 6.3 | 38         | 13      | 60               | 0.96 |
|             |                 | 295    | 219   | 75    | b |           |     |            |         |                  |      |

\* a Residue on evaporation at 103°C.  
b Volatile matter on ignition at 600°C.

LOCATION

T-843 8a.m. - 3p.m. Sept. 11, 1959. Main Mill Sewer to Tailrace.  
T-845 4p.m. - 11p.m. Sept. 11, 1959. Main Mill Sewer to Tailrace.  
T-847 12 mid. to 7a.m. Sept. 12, 1959. Main Mill Sewer to Tailrace.

## SUPPLEMENTARY REPORT

February 5th, 1960.

The preceeding report was prepared in the absence of definite information from the company which was requested for inclusion in the report. Due to unforeseen circumstances the information was delayed until the first week in February. The information as received detailed the changes in raw materials, products, processes, equipment, waste control measures and flow figures.

The report of the Abitibi Power and Paper Company Limited as prepared by Mr. Walter Labunski has been copied and presented below after the revised calculations using the most recent flow figures supplied in Mr. Labunski's report.

### FLOWS

|     |                 |                               |
|-----|-----------------|-------------------------------|
| (a) | Main mill sewer | 16,300,000 I. gallons per day |
| (b) | Sulphite sewer  | 6,070,000 I. gallons per day  |
|     | Combined total  | 22,370,000 I. gallons per day |

### QUANTITY OF WASTE DISCHARGE

#### (a) Main Mill Sewer

|                                 |                    |
|---------------------------------|--------------------|
| 5-day Biochemical Oxygen Demand | 14,507 lb. per day |
| Suspended solids                | 39,609 lb. per day |
| Volatile Suspended Solids       | 35,697 lb. per day |
| Acidity                         | 2,119 lb. per day  |
| Alkalinity                      | 6,194 lb. per day  |
| Iron                            | 156 lb. per day    |

#### (b) Sulphite Sewer

|                                 |                    |
|---------------------------------|--------------------|
| 5-day Biochemical Oxygen Demand | 67,741 lb. per day |
| Suspended solids                | 21,184 lb. per day |
| Volatile Suspended solids       | 19,303 lb. per day |
| Acidity                         | 13,840 lb. per day |
| Alkalinity                      | 0 lb. per day      |
| Iron                            | 129 lb. per day    |



Quantity of Waste Discharge (cont'd.)

Combined Total

|                                 |                    |
|---------------------------------|--------------------|
| 5-day Biochemical Oxygen Demand | 82,248 lb. per day |
| Suspended solids                | 60,793 lb. per day |
| Volatile Suspended solids       | 55,000 lb. per day |
| Acidity                         | 15,959 lb. per day |
| Alaklinity                      | 6,194 lb. per day  |
| Iron                            | 286 lb. per day    |

SEWERED POPULATION EQUIVALENT

Based on a total of 82,248 lb. per day of 5-day Biochemical Oxygen Demand and 0.67 pounds per capita per day, the sewerred population equivalent for the waste was 492,503 persons.

The sewerred population equivalent for suspended solids based on 60,793 lb. per day and a per capita contribution of 0.2 lb. per day was 303,965 persons.

ABITIBI POWER & PAPER COMPANY, LIMITED

SAULT STE. MARIE DIVISION

CONTROL DEPARTMENT

Report No. .831

Subject: Second Revisions To 1947 Industrial Waste  
Survey Report for Sault Mill

Date: January 28, 1960

Compiled by: W.Labunski

Copies to: Messrs. A.M.C.(3) A.J.Harris of OWRC (2)

Approved by: D.O.W.

REFERENCES:

1. Industrial Waste Survey Report - Abitibi - Sault - 1947.
2. Revisions to 1947 Report by D.M.C. - 1953 (Control Dept. Report No. 356)
3. Stream Pollution - Progress Review by D.O.W. - 1956 (Control Dept. Report No. 618)

INTRODUCTION:

Mr. A. J. Harris, of the Ontario Water Resources Commission

Introduction (cont'd.)

from the OWRC Laboratories, 46 Wellesley St. W., T.O. supervised 24 hour sampling of our main P.M. sewer and the sulphite sewer on September 11, 1959.

This report was prepared in response to his request for information to bring the 1947 report more up to date.

Process and equipment changes were noted as well as sewer loss figures.

Similar sub-titles were followed as in the 1953 revision report.

SUMMARY: 7.(b) RAW MATERIALS:

Approximately 55% of the wood used is spruce. The remaining 45% is mostly jackpine with some balsam.

8.(b) PRODUCTS AND PRODUCTION:

Paper grades made are newsprint, rotonews, catalogue and directory. The average daily production is about 335 tons.

11.(b) WOOD PREPARATION:

All riverwood is cut into 4 foot lengths at the summer slasher. This section operates until the middle of December.

35% of the wood is chipped for manufacturing of sulphite pulp.

65% of the wood is used for groundwood pulp.

About 1/3 of the wood for groundwood is cut into 2 foot lengths for the Hydraulic Mill.

13.(b) GROUNDWOOD PROCESS:

There are 24 hydraulically operated grinders using about 1/3 of the wood sent to the groundwood mill.

The twelve old electrically powered grinders were replaced in

13.(b) GROUNDWOOD PROCESS (cont'd.)

January 1954 by six larger Great Northern grinders. These new grinders use the remaining 2/3 of wood sent to the groundwood mill, in four foot lengths. Three Allis-Chalmers primary screens are used in the new mill.

The Feine deckers were removed in 1957 eliminating this point of white water loss.

In December 1957, three Bauer centricleaners were installed to remove grit and dirt from tertiary screen accepts and stock from Haug refiners.

The centricleaner rejects pass on to the paper mill tertiary centricleaner.

15.(b) COOKING LIQUOR:

Sulphite pulp is produced using the sodium bisulphite process since April 1955.

18.(b) SULPHITE PULP PROCESSING:

In January 1959, two new Sherbrooke deckers replaced six old deckers.

In July 1959, a 24" Bauer refiner and five centricleaners were installed to recover No. 1 stock from screen rejects.

This system operates when lap screenings are not being made.

19.(b) PAPER MACHINES:

There are four Fourdrinier paper machines producing catalogue, rotonews, and newsprint.

Coloured paper is made only on No. 1 Machine. In 1959 coloured paper amounted to 7% of our total production.

Most of the fibre from No. 1 machine's white water is recovered by an Oliver Filter which was installed in 1949.

19.(b) PAPER MACHINES:(cont'd.)

In November 1955, a Sveen Pedersen white water saveall was installed on No. 2 machine. This saveall was required to recover pulp fines and fillers used in manufacturing catalogue grades from No. 2 machine's excess wire pit white water.

In October 1958, a Sveen Pedersen white water saveall was installed on No. 4 machine as this machine was prepared to produce totonews and catalogue grades.

In December 1959, a Sveen Pedersen saveall was put into operation on No. 3 Paper Machine.

TABLE II (b)

| <u>Machine<br/>Number</u> | <u>Max. Width<br/>(inches)</u> | <u>Speed<br/>(F.P.M.)</u> | <u>Rated Tons<br/>per 24 hours</u> | <u>Grade</u>              |
|---------------------------|--------------------------------|---------------------------|------------------------------------|---------------------------|
| 1                         | 145                            | 805                       | 65                                 | News and Roto             |
| 2                         | 145                            | 970                       | 65                                 | Roto and Cat.             |
| 3                         | 187                            | 1,055                     | 105                                | News and Roto             |
| 4                         | 175                            | 1,060                     | 98                                 | News and Roto<br>and Cat. |

20.(b) FIBRE RECOVERY:

No. 1 machine's couch pit, sealbox, and excess wire pit white waters are treated by an Oliver filter. The fibre recovered is returned to No. 1 machine chest while the lean water is used in the wood room drum barkers.

No. 2 machine's couch pit white water is pumped over a sloping screen saveall. The fibre along with repulped broke is returned to No. 2 stock proportioner.

Lean sloping saveall white water, excess No. 2 wire pit w.w. (that not used by the fan pump), and vacuum seal box w.w. are treated by No. 2 Sveen Pedersen saveall.

Thick stock from the Sveen is returned to the machine chest,

20.(b) FIBRE RECOVERY (cont'd.)

while the clarified w.w. is used as makeup for primary centricleaner rejects, with the excess being returned to the central white water tank. (C.W.W.T.)

No. 3 and No. 4 couch pit white waters are pumped over another common sloping saveall. The fibre recovered is returned to the groundwood system, while lean w.w. flows to the C.W.W.T.

No. 3 excess wire pit w.w. and vacuum seal box w.w. are treated by No. 3 Sveen Pedersen saveall.

No. 4 excess wire pit w.w. and vacuum seal box w.w. are treated by No. 4 Sveen Pedersen saveall.

The thick stocks from both Sveens are returned to the groundwood decker chests.

The clarified white waters are used separately as makeup for the primary centricleaners systems of both machines.

Excess w.w. from both machines is collected at the C.W.W.T.

The C.W.W.T. in turn supplies the groundwood mill, the sulphite mill and broke pulpers with w.w. as required. Excess w.w. at the C.W.W.T. is sewered.

22.(b) WASTE VOLUMES:

Principal fibre losses for the month of September 1959 were as follows:

TABLE III (b)

| <u>Sewer</u>           | <u>Section</u>       | <u>Nature</u> | <u>Air Dry Tons</u> |
|------------------------|----------------------|---------------|---------------------|
| Sulphite               | Sulphite             | -             | 29.1                |
| Main P.M.              | { Paper Mill & Misc. | -             | 147.6               |
|                        | { Groundwood         | tailings      | <u>13.4</u>         |
| TOTAL (September 1959) |                      |               | 190.1               |

22.(b) WASTE VOLUMES (cont'd.)

This 190 A.D. Tons represented 2.44% of the monthly groundwood and sulphite production.

On the same basis the total losses for each year since 1953 were as follows:

TABLE IV (b)

| <u>Year</u> | <u>Loss A.D.T.</u> | <u>% of GWD. &amp; Sulph. Pulp Prod'n.</u> |
|-------------|--------------------|--------------------------------------------|
| 1953        | 1,476              | 1.47                                       |
| 1954        | 2,727              | 2.60                                       |
| 1955        | 2,468              | 2.36                                       |
| 1956        | 2,292              | 2.13                                       |
| 1957        | 1,935              | 1.85                                       |
| 1958        | 1,859              | 1.98                                       |
| 1959        | 2,262              | 2.23                                       |

The 190 A.D. Tons of fibre were lost during 23 operating days of September 1959.

Average daily losses were  $190/23 = 8.25$  A.D.T./day

SULPHITE WASTE VOLUMES

In the 1953 report it was estimated that 3.75 cooks per day produced an average sulphite effluent of 4.55 MGD. (million Imperial Gallons per day).

In September 1959 an average of 4.52 cooks were blown daily.

Assuming the ppm content was about the same as in 1953, the average flow for September would have been:

$$4.55 \text{ M.G.D.} \times 4.52/3.75 = 5.48 \text{ M.G.D. or } 3,800 \text{ I.G.P.M.}$$

On September 11, five cooks were blown in 24 hours and the flow would have been

$$4.55 \times 5/3.75 = 6.07 \text{ M.G.D. or } 4,200 \text{ I.G.P.M.}$$

#### MAIN P.M. WASTE VOLUMES

The estimated main sewer flow on September 11, 1959, was 14,000 U.S.G.P.M. or 11,600 I.G.P.M. WHILE the average for September 1959 was 13,600 U.S.G.P.M. or 11,300 I.G.P.M. or 16.3 M.G.D.

#### DISCUSSION

Since 1953 many changes have been made both in products manufactured and in methods of operation.

The new catalogue and rotonews grades require more refined pulps and various fillers in their production.

White waters from these grades are more concentrated in fibre and also contain fillers such as clays, talc, and titanium oxide.

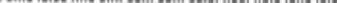
We have installed three Sveen Pedersen white water savealls to recover these fibres and fillers.

Clarified waters are used on the machines and only the excess is sewerred.

Some shell bark escapes from our wood room and we are planning to install a travelling screen in our wood room sewer to remove this bark.

(Signed) 'Walter Labunski'

Walter Labunski  
Paper Mill Control  
Engineer

[illegible]